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Abstract

The outdoor lab was planned to serve all grade levels and incorporate all aspects of outdoor education. Ideas for lab and classroom activities are presented for the following subject areas: physical education, elementary grades, physics, chemistry, mathematics, English, industrial arts, home economics, biology, social studies, conservation, art and language. Further discussion and ideas are presented concerning outdoor education through school camping, correlating conservation and outdoor education with specific content areas and skills, and the utilization of natural resources. (DK)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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HOW THE OUTDOOR LABORATORY CAN BE USED AS AN INSTRUCTIONAL AID
GWINN, MICHIGAN

ED033812

The outdoor lab is being planned with the hope that it will serve all grades and subject matter. Some ideas as to its use have been presented by members of the faculty. We list here only a few ideas that have been presented.

PHYSICAL EDUCATION

1. Biking and camping
2. The use of this area for winter and summer recreation programs, such as: winter sports trail, snowshoe, cross country and skiing.
3. Use of the pond for spin casting and fly casting runs.
4. Use trails for cross country runs and obstacle runs.
5. Put in an archery range and rifle range
6. Possibility of giving fundamentals in boating and canoeing.
7. Showing the effect on tree health by observing sun, moisture, crowded conditions, etc.
8. Recreational picnics
9. Health-observation and study of plants and animals in relationship to growth and development of the human body through areas of:
   a. sleep
   b. exercise
   c. diet
   d. environment
   e. birth
   f. sex
   g. breathing and breath control
10. Physical education-observation and study of animals in relationship of inprovement of body mechanics in the areas of:
    a. running
    b. walking
    c. crawling
    d. jumping
    e. climbing
    f. falling
    g. swimming
    h. floating
    i. diving
    j. balance
    k. self-protection

ELEMENTARY GRADES

1. Natural resource field trips to study
   A. Tree identification
   B. Wild flowers - (spring) and other growing plants
   C. Soil types
   D. Rocks
   E. Stream-improvements, using dam
   F. Insects
   G. Methods and results of conservation practice
   H. Balance of nature
   I. Wildlife is dependent on its habitat
   J. Students will become aware of why all Americans must be Conservation minded.
   K. Students become aware of beauty in nature and the wonder of the life cycle.
   L. School picnics
   M. A valuable experience in correlation with science and social studies.

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PHYSICS

1. Solar experiments (measurement of sun's energy)
2. Radiation in atmosphere
3. Balistics and projectile experiments

OUTDOOR LAB CONT'D.

PHYSICS CONT'D.

4. Velocity of sound experiments
5. Rate of flow of stream

CHEMISTRY

1. In forming concrete impressions of size relationships between metric and English systems of measurements
2. Showing various methods of classification used in various sciences and their importance
3. Oxygen content of creek and rain water at various seasons
4. Effects of pollution on creek water (detergents, etc.)
5. Help students to understand the role of the sun as the source of all energy
6. Atmospheric pressure (weather station)
7. Effects of various chemical fertilizers on plant growth
8. Erosion of rocks due to carbonic acid formed from rain water and CO2 in the air
9. Effects of solution on plant life
10. Corresion studies of various metals (Ions and Electro Chemistry)
11. Soil testing (acidity-nuetralize with slaked lime, etc.)
12. Testing various woods available in lab as sources of chemicals and charcoal (best productions, etc.)
13. Check area with geiger counter for radio activity
14. How the studies of Biology and Chemistry are related through organic Chemistry
15. Show various rocks in region as various forms of SiO2, etc.

MATHEMATICS

1. Use of trigonometric functions in triangulation
2. Opportunity to use transit for land contours, mapping and graphing
3. Differences in metric and English systems (kilometer vs. mile)
4. Determination of heights by use of similar triangles
5. Relationships between diameters and circumferences of trees
6. Determining wood volume and weight with knowndensities of different species
7. See the actual size of an acre
8. Symmetry as found in nature
9. Use of graphs to determine most prevalent species
10. Estimation of number of trees on whole plot by taking a crossection
11. Estimation of heights
12. Comparing the number of trees of various species in various plots
13. Finding the number of board feet in a tree
14. Using the plot for determining a cord or carload
15. Use of compass and map reading
16. Determining flow of water in the stream
17. Determining perimeters, distance across stream, etc.

ENGLISH

1. Describing a scene from nature being good training in sharpening a student's powers of observation.

OUTDOOR LAB CONT'D

ENGLISH CONT'D

2. Having a student stay in one spot and write an organized description of what he sees would be a good demonstration lesson in teaching descriptive point of view.
3. Good source material for argumentative essays on conservation, water pollution, etc.

INDUSTRIAL ARTS

1. Tree identification
2. Having a designated area set aside for the placing of different types of raw wood "to the weather" (research purposes also metals)
3. Preserved tree stump to show annual rings and the story of a trees growth
4. Show how a "burl" is formed in wood
5. Carpentry class could build various shelters
6. Construct radio and T.V. antennas for electronics course
7. Set up "intercom" between outdoor lab and school
8. Driver Ed. could use lab if an area were set aside for practice
9. Architectural class could use it to get ideas for landscape drawings
10. Units in carpentry and masonry projects

HOME ECONOMICS

1. Outdoor cooking
2. Recognizing plants that could be collected at different seasons for home decorations
3. Finding plants and being able to identify those that might be edible
4. If a green house were a part of it, perhaps cut flowers would be available for flower arrangements.

BIOLOGY

1. As a source of biological specimens for use in laboratory exercises, aquariums and terrariums, etc. This use alone has unlimited applications. Field trips for methods of finds, collecting and preserving specimens can be taught. Technics in field indentification of plants (large and small) can be developed.
2. Examples of biological environments and habitats can be shown and how they change within large and small areas.
3. How a balance of nature should be maintained and why it is necessary can be demonstrated concretely.
4. Ecological relationships can be easily demonstrated
5. Conservation of biological resources
6. Special adaptations of organisms to the various environments which are available at the site
7. Plant and animal communities will be expressed more fully by observing them.
8. Experiments in heredity can be done (in-breeding of plants, grafting of trees, cross pollination and its effects).
9. Above all a more conservation minded student body can be developed, an asset every citizen should have.

OUTDOOR LAB. CONT'D.

SOCIAL STUDIES

1. Look up the history of the old stage road.
2. Find out what the past ownership of the property was and how it was used if at all.
3. Geography classes can make excellent use of weather station.
4. An understanding of the econimic importance of the forest to this area.
5. An opportunity to instill the importance of conservation towards mans well being and a desirable citizenship trait is to be concerned over the welfare of man.

CONSERVATION

The use of this area is unlimited, the list here is only a scratch on the surface.

1. Wild life might be observed by feeding areas or looking for signs of wild life; like tracks, droppings, etc.
2. Wild life food and habitat could be studied.
3. A place to study growth of trees in relationship to soil type, drainage, shade, sunlight, etc.
4. Excellent place to see and study trees in natural setting.
5. Activities in poor and good forest management could be illustrated.
6. Soils study area could be useful to show type of soil, erosion, control, testing soils, etc.
7. A place to study insect life, plant life, and a collecting place for specimens to study and identify.
8. Rock outcrop valuable to study its type, why it is there and the plant life it might attract.
9. An excellent place to conduct outdoor experiments and to observe the balance of nature and the struggle that takes place for survival.
10. A place to learn to use the compass, maps, beltmore stick, increment borer and other field devices.
11. The stream provides an excellent place to study and collect aquatic plant and animal life and to observe the relationship of low land plant and animal life.
12. The area is of value in teaching concepts on fire prevention, need to stop the litter bug, need of protection for rare plants or animals, etc.

ART

1. Sketching - an opportunity to do outdoor sketching with a pencil, charcoal and other art mediums.
2. Painting - painting classes could use the lab very well for outdoor work. It would afford opportunities to study and paint different types of trees, various textures on trees and stone. A chance to study light and shadow in trees, water and other outdoor areas. The water area would be very useful for the study and painting of shadows and reflections under different conditions.
3. Clay work - perhaps there will be an opportunity for doing work with clay in the lab. Especially practical would be the building of a simple firing oven for baking clay objects.
4. Many more uses will be found for the lab pertaining to art after the lot becomes available. It will be of value to both elementary and high school levels in teaching art.

OUTDOOR LAB. CONT'D

LANGUAGE

1. A foreign language field trip through the lab using the language, the lecturer could describe the characteristics of various trees and plants.
2. A concrete vocabulary study, learning the names of these trees and plants in a foreign language.
3. The autumn or spring setting could be used for background for poetry about the seasons for advanced classes.

The people who attended NMU-DCT Workshop at Marquette visited the school where this Outdoor Lab is located.

Gwinn, Michigan
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OUTDOOR EDUCATION THROUGH SCHOOL CAMPING

Active conservation education concentrates on proper use of soil, water, minerals, forests, wildlife, and other natural resources in terms of people. This type of education is a natural for getting children out-doors where they can observe and comprehend environment and resources as they exist. Understanding of problems, management trends and outlooks are included.

Actually, the school camp is a physical tool using the outdoors as a classroom. It can be an integral part of the school curriculum and may occur at any time during the school year as well as during vacation periods. This extension of the classroom to the outdoors is based on the premise that first-hand outdoor experience is the best teacher. All grades go to camp. The teacher and the children learn together. Although the time at camp may vary from an "overnight" to any longer period, Monday to Friday is the usual school camp week in any season. In any case, the time spent at camp should be directly determined by the objectives of the school group, and the time needed to reach these objectives.

Conservation is a way of life concerned with basic human needs and because today's youth will tomorrow be managing renewable and nonrenewable resources, it is essential that they realize man's survival depends upon how wisely he uses these resources. Since some things can be best learned in the out-doors, here then, is the ideal setting for developing understand-ings, appreciations and attitudes about intelligent resource management.

Academically, children gain appreciation of man's dependency on natural resources. They learn of interrelationships of man, soil, water, minerals, timber and wildlife by participating in their protection, care and wise use through outdoor living experiences. The camp provides first hand learning through participation.

Since school camps accommodate all grades, it follows that the conservation phase varies from an elementary nature study type of awareness and appreciation to challenging and vigorous activities for older youth. Here is the teacher's opportunity to create a desire to further develop techniques, refine skills, acquire self-reliance, and provoke an inquisitive understanding of resource use.

School camping with its group living in the outdoors is conducive to development of potentialities and leadership abilities. From this positive program, latent talents emerge. Here, too, we find certain children helping each other for the first time and succeeding at camp, where they seldom succeeded at school. Here are opportunities for initiative, the acquiring of assurance, learning to make decisions and acting upon them. Enthusiasm, combined with exploration by the group, can make outdoor experiences successful and exciting.

When a group decides to begin school camping and has set a date, reservations for a facility are made. About a dozen outdoor centers are provided by the State, and information may be had by contacting the Conservation Department at Lansing, or the supervisor of the recreation area where the outdoor center is located. Other facilities are available: Scout camps, Y.M.C.A. camps, etc. Their use is encouraged. In some instances,

several schools or districts have pooled resources to finance and use their own camp sites. This is particularly desirable in that the children, teachers, parents, the entire community, have a closer feeling and appreciation for the camp and program. Such a camp can be developed more closely to needs of the children and community.

Before the outdoor education program is put to work, parents should be invited to meetings which inform them of the opportunity offered their children. Here they can discuss all things connected with the project. Informed parent-teacher-student groups will be responsive ones. Films are available; and other schools and teachers often have slides from their camps. Education consultants from the State Departments of Education and Conservation will provide services. From the Conservation Department, consultant services may be obtained by contacting Regional Conservation offices in Marquette, Roscommon or Lansing.

It cannot be stressed enough that the pre-camp planning and the follow-up back in the classroom are vital parts of the whole program of school camping and outdoor education. Pre-camping planning is an extremely important phase, wherein pupils and teachers plan together, work out details, get goals and establish objectives. Here is the opportunity for parents, teachers and students to plan, live and learn with their own group; values gained are greater if this relationship is considered in camp staff selection. A feeling of belonging and a feeling of group spirit are more easily acquired. Program planning is also developed. Involvement of resource persons from the home community provides valuable assets to the program.

Experience in the use of outdoor centers by schools affords many opportunities for continuing education. Back in the classroom, additional exploration may be guided into various interests as a result of curiosities aroused, ideas inspired and activities participated in outdoors. Greater understanding of natural resources, their inter-relationships and inter-dependencies, will ultimately focus thinking in terms of human needs. In addition to future benefits or "carry-over," outdoor education provides a feeling of well-being right now.

The extent and direction of educational experience possibilities in the outdoors and the resultant classroom "follow-up" are limited only by individual imagination, enthusiasm and effort.

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OUTDOOR EDUCATION CORRELATION

I. Language Arts

1. Leisure time reading
2. Selecting and reading stories and poems for campfire
3. Research for all lessons, First Books, Encyclopedia Creative Science, Science (Library Books), Dictionary
4. Bulletin boards, displays, etc.
5. Dramatics - campfire skits
6. Keeping a diary of the program
7. Letter-writing
8. Composition and poetry writing
9. Table conversation
10. Discussing problems - stident government
11. Keeping science records
12. Oral and written reports
13. Evaluation - post camp

II. Arithmetic

1. Finding Distances: Home to camp -- In and around camp -- Hikes
2. Tree stump diameters
3. Area problems
4. Daily weather graphs
5. Time schedules
6. Compass reading - Orienteering

III. Social Studies

1. Reading and Map making
2. Terrian study
   a. Hills
   b. Stream bed
   c. Tributary, source, mouth, headwater, etc.
   d. Rock formations
3. Historical background - local, regional, state.

IV. Science

1. General acquaintance with nature -- birds, trees, soil, animals, stars, weather, insects
2. Discuss how sunlight, water affect the growth of plants.
3. Forest floor conserves water and prevents floods
4. Practice proper conservative use of natural resources
5. Weather effects on our daily life
6. Fire making and control
7. Observing water power
8. Emphasize "Balance in Nature"

OUTDOOR EDUCATION CORRELATION - Cont.

V. Health

1. Developing proper eating habits
2. Getting sufficient rest
3. Participating in safe and healthful exercises
4. Care of wounds
5. Accident and fire prevention
6. Care of teeth.
7. Personal cleanliness
8. Stress on outdoor alertness

VI. Arts and Crafts

1. Sketching to illustrate diary
2. Bulletin board planning and construction
3. Appreciating the beauty of nature
4. Selection of scene for sketching
5. Making projects from natural material
6. Learning proper use of tools
7. Using ingenuity and imagination in construction

VII. Music

1. Singing for fun -- campfire, meals
2. Dramatics
3. Square dancing
4. Instrumental work, if possible
5. Assembly calls - ceremonials

VII. Physical Education and Recreation

(Permeates the entire program under many different aspects)

IX. Citizenship

1. Cooperation
2. Sharing experiences and property
3. Fair play
4. Courtesy and manners
5. Table etiquette
6. Learning to follow instructions
7. Learning to lead wisely
8. Group living

Taken From: Outdoor Education
Dr. Julian Smith
A.A.H.P.E.R.

Reprinted By: Region III Headquarters
Walter F. VanDien
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CONSERVATION INTEGRATION

Some information and suggestions for teachers

Correlating the general field of Conservation with established school subjects is one way of vitalizing the school's curriculum, and should not be construed as another burden on the present-day teacher.

In an effort to provide information and suggestions for teachers who feel that they "just don't know where (or how) to start," the following information has been assembled to provide a few helps and hints for those teachers from KINDERGARTEN on up through the eighth grade. Correlation with all subjects and at all age levels is not difficult to understand, or to apply, after we look into its implications!

To begin with, we should offer a very simple definition of CONSERVATION: "The wise use and wise management of the natural resources for MAN'S benefit." A more complicated definition might be something like "To wisely utilize a NATION'S resources so that Nation can continue to build, and produce, and expand, and maintain its standard of living without destroying the very bases of its existence, the native resources, is modern Conservation."

The NATURAL RESOURCES we are concerned with are SOIL, PLANT LIFE, ANIMAL LIFE, and MINERALS. The day is not far off when we will be very concerned about AIR! In fact, there are areas in these United States where air-pollution is a grave problem, and in future years it will become even more of a problem.

Many County, State and Federal agencies are concerned with resource management in one way or another. Conservation is many-faceted, and involves PEOPLE from the local community all the way up the scale of society to antions, and has international aspects that reach across the oceans. It is truly a "Way of Life," and we as adults are remiss in our duties if we fail to make an effort to instill in our youth a deep and permanent feeling of appreciation and interest toward the resources. If this is started in the lower elementary years, by the time the students are at the high school level, if we have done our jobs well, they will have an attitude of stewardship toward the land; we will have done our part in assuring that future generations shall have the same, or better, standard of living that we enjoy today.

With the above premises in mind, the following general themes and objectives are suggested for the different grade levels. They are not much more than helpful hints, and they are not as restricted, by grade, as they may sound. <u>How</u> these objectives are met must depend on the teacher's experiences, training, personal attitudes, and materials with which to work. The agencies mentioned above have countless publications which are of inestimable aid, in specific and in general fields of Conservation.

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THESE OBJECTIVES MAY BE CONSIDERED TO BE STEPPING STONES, FROM KINDERGARTEN ON UP THE YEARS THROUGH HIGH SCHOOL. ONE OF THE NUMEROUS OBJECTIVES IS THE DEVELOPMENT OF THE GOOD CITIZEN, INTERESTED IN HIS NATION'S WELFARE, AWARE OF THE NATION'S OR THE STATE'S DEPENDENCE ON THE NATURAL RESOURCES. HE WILL BE VITALLY INTERESTED AS AN ADULT IN DOING HIS PART FOR THE GOOD OF FUTURE GENERATIONS, SEEING THAT THEY HAVE OPPORTUNITIES TO HUNG, OR FISH, OR CAMP, OR TO DO ALL THE OTHER THINGS OUT-OF-DOORS WE DO TODAY. BUT MORE THAN THIS, HE WILL DO HIS PART IN HELPING HIS NATION TO SURVIVE FOREVER, BY WISELY MANAGING ITS SOIL AND WATER AND THE OTHER RESOURCES.

C O N S E R V A T I O N E D U C A T I O N

GENERAL THEME --Natural Resources and Our School Welfare

Major problems for consideration at each grade level:

KINDERGARTEN

What do our plant and animal friends do to help us in our school and school surroundings?

GRADE 1

What do our plant and animal friends do to help us have a happy, healthful and productive home?

GRADE 2

How do our parents and neighbors depend on nature's gifts for food, clothing and shelter?
What can we do to use them wisely?

GRADE 3

How does our community help us and how can we make it a better place in which to live?

GRADE 4

How are our problems of living (food, clothing, shelter, and recreation) closely related with the way we use our natural resources?

GRADE 5

What effects do natural resources (soil, water, minerals, animals, plants) have upon patterns of living in various sections of the United States and Canada?

GRADE 6

What effects do natural resources (soil, water, minerals, animals, plants) have upon culture of other countries?

GRADE 7

First Semester:

What conservation measures have we learned from European nations and how can we profit from their experiences with natural resources?

Second Semester:

How have we in Michigan adapted our living to our physical environment?
How have Michigan resources contributed to her greatness?

GRADE 8

How can we build and maintain the United States through wise resource use?
How can we merit the possession of our great resources--the soil and water?

GRADE	OBJECTIVES	CORRELATION WITH OTHER SUBJECTS
Kng	To learn that plants grow in soil and that people eat plants and animals; that plants and animals need water; that people need water.	Finger skills, touch Size differences Hardness, color Stories, pictures Vocabulary Nature study; science
1st	To become acquainted with common plants and common animals and the soil.	Reading (short stories read to class) Art (draw pictures and make posters) Language (telling stories about things out of doors) Spelling - new words Arithmetic (count animals or plants)
2nd	To understand how man depends on plants, animals, soil, minerals and water; how soil may be harmed, and can be cared for; how plants depend on soil, sun, water; how soil is related to wind and water.	Reading short science stories Language - reports given orally Art- posters, drawings Spelling-new words Arithmetic-count; measure Music Nature study
3rd	Learn what natural resources are learn resources of community, state nation; uses of resources in standards of living and our way of life; learn something of natural process; develop consciousness of needs for wisely using and managing the natural resources.	Reading Science Art and Handicrafts Music Language Arts Spelling Social changes;development of appreciative and understanding attitude about resources; acquire better reading and working habits; develop skills in vocabulary, recitation and spelling.
4th	How man and nature use and destroy resources; study types of misuse; study management of soil and water; learn effects of misuse on man and other resources; develop understanding of how resource depletion changes ways of living.	Language Arts-spelling, reading, Language (oral and written stories Social Studies - Science- Arts Music
5th	Study some methods used in the wise management of our resources; renewable and non-renewable resources differ in utilization and management relationship between standard of living and conservation.	Social Studies Spelling Reading Language Arts Art Music Arithmetic Science Health

GRADE	OBJECTIVES	CORRELATION WITH OTHER SUBJECTS
6th	How science is used in managing resources; study community examples of soil and water practices and learn why they are used and how they might be improved; study relationship of plants and animals to soil; learn something about land use; build and strengthen conservation habits and knowledge of community and state problems.	Reading Art Arts and Crafts Language Spelling Arithmetic History Science Health Hygiene Social Studies
7th	Recognize the influence on man, civilization and standards of living, past and present, of natural resources management.	History Math Science Social Studies Language Arts Government Civics Arts and Crafts
8th	Learn the relation between social and economic problems and conservation; governmental efforts to manage natural resources; gain contact with specific local government agencies concerned with conservation; learn how local, state and national prosperity are allied to wise conservation practices.	Social Studies Arithmetic Spelling Language Arts Arts and Crafts Workshop Science

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